User Guide for the ELSA Wave 2 Nurse Visit Data (version 2).

Introduction

The English Longitudinal Study of Ageing (ELSA) is a study of people aged 50 and over and their younger partners, who were living in private households in England at the time of the first wave of fieldwork (2002/2003). The sample was drawn from households that had previously responded to the Health Survey for England (HSE) in 1998, 1999 or 2001.

As a longitudinal study, the aim is to interview the same group of people each time to measure change in their health, economic and social circumstances. ELSA can complete the picture of what it means to grow older in the new century, and help us understand what accounts for the variety of patterns that are seen. More information about ELSA can be found in the user guide for the core datasets for Wave 1 and Wave 2 (in the archive) or online at: **http://www.ifs.org.uk/elsa/**.

This User Guide relates to the second version of data deposited for the ELSA Wave 2 nurse visit, which was carried out between July 2004 and August 2005. Respondents were asked towards the end of their main Wave 2 interview if they agreed to a nurse visit. An appointment with the respondent was either set at the time by the interviewer or later by the nurses themselves. Respondents will receive a nurse visit every other Wave, so the next one will be carried out with Wave 4 fieldwork, which is scheduled for 2008/2009.

ELSA is the result of collaboration between University College London, the Institute of Fiscal Studies, and the National Centre for Social Research (NatCen). Other academic collaborators are based at the Universities of Cambridge, Exeter and East Anglia, who provided expert advice on specific modules.

The differences between this version of the data and the initial version that was deposited at the Data Archive are that it contains further variables relating to the fasting glucose blood result and also some additional derived variables relating to the blood analyses. It also contains a revised version of the variable FASTELI.

Data Collection Methods

The nurse interview comprised a personal face-to-face CAPI interview, the taking of a number of different measures and an additional voluntary self-completion questionnaire. The nurse visit has been a feature of HSE since the survey was first carried out in 1991. When the nurse visit was incorporated into ELSA, most modules from the HSE nurse visit were kept and a number of new ones were added in. The modules that were taken from HSE were blood pressure, blood sample, standing and sitting height, weight, waist and hip measurement and lung function. The modules that were added were balance, leg raise, chair rise, grip strength, and the saliva log. The first three of these new measurements, taken alongside the walking speed measurement carried out in the main ELSA interview, form a battery of tests that have been shown to be highly predictive of level of disability, future use of health care and mortality. These measures were adapted from the EPESE (Established Populations for Epidemiologic Studies of the Elderly) protocol, which looks at older cohorts and the development of disability. [1,2] The grip strength measure was taken from the Survey of Health, Ageing and Retirement in Europe (SHARE). [3]

The changes between HSE and ELSA were made because ELSA focuses on an older population. The collection of saliva, in order to measure cortisol, and the accompanying questionnaire was added

[1] Studenski S, Perera S, Wallace D, Chandler JM, Duncan PW, Rooney E, Fox M, Guralnik JM. 2003, 'Physical performance measures in the clinical setting', *J Am Geriatr Soc.,* 51, pp. 314-22.

[2] Kuh D, Hardy R, Butterworth S, Okell L, Richards M, Wadsworth M, Cooper C, Sayer AA. 2006, 'Developmental Origins of Midlife Physical Performance: Evidence from a British Birth Cohort ', *Am J Epidemiol*.

[3] http://www.share-project.org/, retrieved 29/6/2006.

because preliminary data from the Whitehall II study showed that cortisol levels are linked to social environments and ageing.[4]

The importance of reading out the questions in the interview *exactly as specified* was emphasised to the nurses. This was essential to ensure comparability of answers.
The respondent was offered a copy of their results for several of the measures (blood pressure, height, weight, waist, hip and lung function). These were written on a "Respondent Measurement Record Card", which is archived along with this User Guide. The nurse was asked not to give any interpretation of the results except for blood pressure, and here the nurse was only asked to say whether the measurement was normal or high and, where necessary, whether the respondent should contact their GP.

With the respondent's consent, we also sent them a letter after their nurse visit, which showed whether the result of each of the analyses conducted on the blood was within or outside normal. If any results were out of range, respondents were told that they should contact their GP in the near future.

Again, with the respondent's consent we sent their blood pressure, lung function and blood sample results to their GP. The exact results for the blood analyses were included, and GPs were informed of the normal range for each analysis.

We aimed to send the results to respondents and their GPs within three months of the nurse visit, unless there was a clinical indication to do so more urgently.

For further information on the protocols for the nurse visit please see the "Nurse Project instructions" which are archived with this User Guide.

Sample Design

The ELSA sample has been designed to represent people aged 50 and over, who were living in private households in England in the first wave of ELSA (2002/2003). Three years of the Health Survey for England (HSE) were selected as the sampling frame: 1998, 1999 and 2001. These years were chosen because they were recent and could provide a sufficiently large sample size. ELSA used the core samples for these years, all of which were nationally representative.

The HSE 1999 sample design also included a boost sample that represented ethnic minorities. Because of funding constraints, it was not possible to follow-up the boost sample and it was discarded. Together these three HSE years contained 23,132 responding households. Households were removed from the HSE sampling frame if it was known that there was no adult of 50 years or older in the household who had agreed to be re-contacted at some time in the future. Individuals in the remaining households provided the basis for the ELSA sample (11,578 households containing 18,813 eligible individuals).

The ELSA Wave 1 interview provided the baseline for the study. Only households that responded at Wave 1 were approached at Wave 2. Eligible sample members who responded at Wave 1 were renamed 'core members' to distinguish them as the core element of the continuing ELSA sample. Core sample members are individuals who were living within the household at the time of the HSE interview and were born on or before 29th February 1952. This date was chosen to ensure that all sample members were aged 50 or over at the beginning of March 2002 (i.e. at the beginning of Wave 1 fieldwork). They were eligible for interview at Wave 2 unless they had explicitly asked not to be re-contacted at the end of their first ELSA interview, or had died or moved out of Britain (respondents who had moved to Wales or Scotland were eligible for interview). 81.5% of those who completed a Wave 1 interview and were eligible for a Wave 2 interview as an ELSA 'core member' had an interview at Wave 2. Only core sample members who had a Wave 2 interview in person (i.e. not by proxy) were eligible for a nurse interview. There were 8688 respondents eligible for the nurse visit. Other types of sample member that appear in the main Wave 2 interview archived data set, such as younger partners and new partners, were not eligible for a nurse interview.

[4] Cohen S, Schwartz JE, Epel E, Kirschbaum C, Sidney S, Seeman T. 2006, 'Socio-economic status, race, and diurnal cortisol decline in the Coronary Artery Risk Development in Young Adults (CARDIA) Study', *Psychosom Med*., 68, pp.41-50.

The number of respondents who had a productive nurse interview is 7666, which is 88.2% of those eligible for a nurse visit, or 71.2% of all those eligible for an ELSA Wave 2 interview. Of these, 5990 (78.1%) had one or more results from the blood sample analysis**,** and 3741 of these respondents (62.5%) were eligible for a fasting blood sample (see the 'Blood sample' section for more details about fasting).

Content of the nurse visit

As with the ELSA main interview, the nurse interview was divided up into a number of modules. Further details about the modules in the main CAPI modules in the nurse visit are given in this section.

Below is a table giving an idea of the eligibility conditions for each module. These conditions are also explained in more detail in this section.

Module	**Eligibility**
Blood pressure	All
Grip Strength	All
Blood Sample	All except if: • Had clotting or bleeding disorder or was on anti-coagulant drugs at time of interview • Had ever had a fit (including epileptic fit, convulsion or convulsion associated with high fever) • Were taking anticoagulant drugs (such as Warfarin, protamine or acenocoumarol). Additionally, respondents were asked to give a fasting blood sample unless they were: • Aged 80 or over • Diabetic and were on treatment • Considered to be malnourished or otherwise unfit to fast (information obtained from interviewer).
Standing and sitting height and Weight	All. Standing height and weight were not measured if the person was chairbound, too unsteady on their feet, or found standing painful. Weight was also not measured if the person weighed over 130kg
Waist and Hip	All except if chairbound or have a colostomy or ileostomy
Lung Function	All except if: • Had abdominal or chest surgery in the preceding 3 weeks • Had been admitted to hospital with a heart complaint in the preceding 6 weeks • Had eye surgery in the preceding 4 weeks
Balance	Side by side stand – all Semi-tandem – if held side by stand for 10 sec. Full-tandem – if held semi-tandem for 10 sec.
Leg Raise	Eyes open - If aged 69 years or under and held side-by-side stand for 10 sec. Eyes shut - If held the leg raise with eyes open for 30 seconds.
Chair Rise	All

For all the tests, if a participant was uncomfortable performing the test or if the nurse felt that a procedure was not safe for a given individual, the test should not have been performed.

Blood pressure

Three measurements were taken of systolic and diastolic pressure as well as pulse rate on the respondent's right arm while they were seated. The respondent was given advice if their results indicated a higher than normal reading. The nurses were instructed to give this advice based on the higher of the last two blood pressure readings – the first reading can be high, as people are sometimes nervous about having their blood pressure taken.

If you wish to compare the blood pressure results to earlier HSE ones, please note that Omron machines were used to take the readings in the ELSA Wave 2 nurse visit and in HSE from 2003 onwards. In HSE prior to 2003, Dinamap machines were used to take the readings. A conversion factor will need to be applied to the results, as the machines are not comparable. Please contact the ELSA or HSE data manager for more details (see end of User Guide).

All respondents were eligible to have their blood pressure measured.

Grip strength

Three measurements of grip strength were taken on both the dominant and non-dominant hand. The respondent was asked which was their dominant hand. The precise measure carried out was the isometric handgrip strength measure.

All respondents were eligible to have their grip strength measured.

Further details on the grip strength protocol can be found in the "Nurse Project Instructions" and also the "Scriptcard, Chair Rise & Grip Strength" (archived with this User Guide).

Blood sample

All sample members who gave consent were eligible for a blood sample to be taken. The only exceptions to this were people with clotting or bleeding disorders, people with a history of fits or convulsions, or people who were on anticoagulant drugs (e.g. Warfarin, protamine, acenocoumarol).

Respondents aged 80 or under were asked to fast before their nurse visit so a fasting blood sample could be taken. Respondents were not asked to fast if they had diabetes and were on treatment or if they were considered to be malnourished or otherwise unfit to fast (this information was obtained from the interviewer). Respondents who were asked to fast were given guidelines about when and what they could eat based on their appointment time. These guidelines can be found on the "Appointment Card" (archived with this User Guide).

In the nurse visit, respondents were asked when they had last eaten and, if this was in the last 24 hours, what they had eaten. The CAPI program used their responses to work out if they had fasted adequately. A respondent was considered to have fasted and therefore be eligible for a fasting blood sample if (see FASTELI – note that this release of the data contains a revised version of this variable):

- They hadn't eaten or drunk anything (apart from water) on the day of their nurse visit OR
- They hadn't eaten or drunk anything (apart from water) in the past 5 hours and had only had a light meal (see appointment record card) or a piece of fruit or drink the last time they ate.

Blood was only taken from respondents on one occasion; so if they had fasted adequately (i.e. met one of the conditions above) then all the analytes for that person should be considered as a fasting sample, otherwise they were non-fasting samples. All the blood analytes (except blood glucose) were measured for all the blood samples (i.e. both fasting and non-fasting samples). Therefore, for some cases the lipids measures were on fasting samples and for others it was on non-fasting samples. If you are doing analyses that are dependent on the blood being a fasting sample, e.g. fasting lipids for metabolic syndrome or cardiac risk, please ensure that you only use the sub-sample of respondents who actually fasted (i.e. FASTELI=1).

Blood glucose was only measured for people who had fasted.

Respondents were asked if they consented to DNA being extracted from their blood sample and stored for future analysis. A maximum of six small tubes of blood (ranging in size from 2ml to 6 ml) were collected for each respondent. 3 of these were collected from all respondents, an additional tube was collected if the respondent had fasted, and the final 2 tubes were collected if the respondent consented to have their DNA analysed.

The blood samples were sent to an external laboratory where a number of analyses were carried out, and the levels of certain compounds in the blood were measured, which are detailed further below:

Fibrinogen – A protein necessary for blood clotting. High levels are also associated with a higher risk of heart disease.
Total cholesterol – Cholesterol is a type of fat present in the blood, related to diet. Too much cholesterol in the blood increases the risk of heart disease.
HDL cholesterol – This is 'good' cholesterol, which is protective for heart disease.
Triglycerides - Together with total and HDL cholesterol, they provide a lipid profile that can give information on the risk of cardiovascular disease.
LDL cholesterol – This is 'bad' cholesterol, increased levels are associated with atherosclerosis, and thus myocardial infarctions, strokes and peripheral vascular disease.
Ferritin and Haemoglobin (Hb) – These are measures of iron levels in the body and are related to diet and other factors.
C-reactive protein (CRP) – The level of this protein in the blood gives information on inflammatory activity in the body, and it is also associated with risk of heart disease.
Apolipoprotein E (ApoE) – This is involved in the transport of cholesterol and plays a protective role.
Fasting glucose and non-fasting glycated haemoglobin (HBA1c) – Both indicate the presence or risk of type 2 diabetes, which is associated with an increased risk of heart disease. The fasting glucose result is now archived with this version of the data.

The samples were taken in a particular order so that if a situation arose where there was insufficient blood to fill all the tubes, the analyses with the highest priority could still be undertaken. The analyses in order of priority were fibrinogen, full lipids (total cholesterol, HDL cholesterol and triglycerides), ferritin, CRP, ApoE, fasting glucose (if applicable), haemoglobin, glycated haemoglobin, and finally DNA extraction (if consent was given).

Also included in the Blood Sample section of the data are three derived variables. The first, BSOUTC, shows whether taking a blood sample was attempted and, if so, how successful it was. The second, BLOODR, shows whether a blood sample was taken and, if so, whether all the blood tubes were received at the lab for analysis. The third, FASTHRS, shows how long the respondent had fasted for (distinguishing those who fasted for between five and eight hours and those who fasted for at least eight hours).

For further details about these variables, please see the derived variables section at the end of this User Guide.

<u>Height and weight measurement</u>

Height was measured both standing and sitting. Sitting height is a measure of pre-pubertal growth. If height or weight could not be measured then an estimate was obtained from the respondent instead. If the nurse thought the measurement was likely to be more than 2 cm (3/4 inch) from the true figure for height or more than 1 kg (2 lbs.) from the true figure for weight, it was considered unreliable and they were asked to code it as such.

The maximum weight that would register accurately on the scales was 130kg (20½ stone). If the nurse thought the respondent exceeded this limit then they were instructed to code "Weight not attempted" and ask the respondent for an estimate instead.

Users of the data are reminded to consider the variables HJREL and WJREL when looking at the measurements in this module as they show whether the data is likely to be reliable or not.

All respondents were eligible to have their height and weight measured.

Using the height and weight measurements obtained, BMI (body mass index) was calculated. This is a measure of body fat based on height and weight that applies to both men and women. BMI values were then grouped according to World Health Organisation definitions of obesity.

Further information on the protocols for the height and weight measurements can be found in the "Nurse Project Instructions" and also the "Frankfort Plane Card". These documents have been archived along with this User Guide.

Waist and hip measurement

Both these measurements were taken twice each, however, if the second measurement differed from the first by 3cm or more, the nurse was given an error message by the CAPI program and asked to either amend one of the previous responses, or to take a third measurement.
If the nurse believed that the measurements they took were 0.5cm more or less than the true measurement because of problems encountered (e.g. clothing the respondent was wearing), this was considered unreliable.

All respondents were eligible to have their waist and hip measurements taken, unless they were chairbound or had a colostomy or ileostomy.

Further information on the protocols for the waist and hip measurements can be found in the "Nurse Project Instructions" which has been archived along with this User Guide.

Lung function

Three measurements each were taken of FVC (forced vital capacity), FEV (forced expiratory volume) and PF (peak flow) using a spirometer.

Occasionally by mistake the nurse recorded the value of the ratio between FEV and FVC (i.e. FEV/FVC) in the CAPI instead of FEV. As it is impossible to know for certain which interviews this occurred in, all FEV values that were less than 1 have been re-coded to their own code (-3).

It should be noted that the variables HTFVC and HTFEV (highest technically satisfactory values of FVC and FEV respectively) should not be combined to give a FEV/FVC ratio without checking that they are from the same blow.

All respondents were eligible to have their lung function measured, except for the following:

- Those who had had abdominal or chest surgery in the preceding 3 weeks
- Those who had been admitted to hospital with a heart complaint in the preceding 6 weeks
- Those who had had eye surgery in the preceding 4 weeks.

Further information on the protocols for the lung function measurement can be found in the "Nurse Project Instructions", which has been archived along with this User Guide.

Balance

This module involved the respondent completing three stands (a side-by-side, a semi-tandem and a full-tandem), each of which was demonstrated to the respondent by the nurse beforehand.

The eligibility for the balance module is slightly more complex than for the other modules. All respondents start with the side-by-side, if they held this for 10 seconds they attempted the semi-tandem stand for 10 seconds. Respondents who completed this were then asked to do the full tandem stand. If the respondent was aged 69 and under they were asked to attempt the full tandem stand for 30 seconds; if they were 70 or over they were asked to do the full tandem stand for 10 seconds.

Further details on the balance protocols for each balance test can be found in the "Nurse Project Instructions" and also the "Scriptcard, Balance and Leg Raise". These documents have been archived along with this User Guide.

Leg raise

Only respondents aged 69 and under who successfully passed the side-by-side stand were asked to complete this module. They were asked to stand on one leg with their eyes open for 30 seconds and then, if they did this, they were asked to complete the same movement with their eyes closed for 30 seconds.

Further details on the leg raise protocol can be found in the "Nurse Project Instructions" and also the "Scriptcard, Balance and Leg Raise".

Chair rise

This is a measure of lower body strength, during which respondents were asked to stand up from a firm chair without using their arms. If they succeeded, they were asked to stand up and down as quickly as they could for either five rises if they were aged 70 and over, or up to ten rises if aged 69 and under. The nurse recorded the time that respondents took to do the number of rises required. For respondents who did ten rises, the nurse recorded the times taken to do both five and ten rises (in the same attempt) so that all respondents had a time for five rises which could be compared.

Further details on the chair rise protocol can be found in the "Nurse Project Instructions" and also the "Scriptcard, Chair Rise & Grip Strength".

All respondents were eligible for the chair rise.

Saliva log

Respondents aged less than 80 were asked to collect four samples of their saliva at certain times during a 24-hour period. The purpose of collecting saliva was to measure respondents' cortisol levels, which are related to stress. Respondents were asked to fill in a log book each time they collected a saliva sample that asked how they were feeling at that time. The saliva and log book data will be archived later in 2006.

Personal beliefs and wellbeing questionnaire

In addition to the main face-to-face CAPI interview, a voluntary self-completion booklet about respondent's personal beliefs and wellbeing questionnaire was also left with one in 10 respondents after the nurse visit. Data from the self-completion questions will be archived in late 2006 or early 2007.

Other documents used in the data collection process (all have been archived, unless indicated otherwise)

Filename	Description
ELSA Survey Leaflet.pdf	Leaflet given to respondents containing general information about ELSA
Scriptcard, Chair Rise and Grip Strength.pdf	Protocol for Chair Rise and Grip Strength modules, which show the wording that the nurses used when describing the measures to the respondents.
Scriptcard, Balance and Leg Raise.pdf	Protocol for Balance and Leg Raise modules.
Respondent Measurement Record Card.pdf	Where the nurse recorded height, weight, waist, hip, lung function and blood pressure measurements for the respondent, if the respondent wished.
Respondent Grip Strength Record Card.pdf	Where the nurse recorded grip strength measurements, which was sent back to the office in order to check any discrepancies.

Genetics Leaflet.pdf	Leaflet given to respondents about the collection of genetic material as part of the study and why it is being done.
Frankfort Plane Card.pdf	More detailed protocol about taking the height measurement.
Nurse Project Instructions.pdf	Detailed information about all aspects of the nurse visit, given to nurses to read before they carried out their interviews.
Nurse Leaflet.pdf	Leaflet given to respondents containing information about the ELSA nurse visit.
Appointment Record Card	Given to respondents to remind them of their appointment with the nurse and advise them how to prepare for it.
Consent booklets, Office and Respondent copies (pdf's)	The Office Consent Booklet contains the forms the respondent has to sign to give written consent for: - blood pressure readings to be sent to their GP - lung function readings to be sent to their GP - blood samples to be taken - blood test results to be sent to their GP - blood sample for storage for future analysis - blood sample for DNA extraction and storage - saliva samples to be collected. The Respondent Consent Booklet contains a copy of the different consents and permissions that the respondent was asked to sign during the interview, for their records.
Self Completion Questionnaire – Personal Beliefs and Wellbeing.pdf	*Will be archived in late 2006 or early 2007.*
Saliva Sample Logbook.pdf	*Will be archived in late 2006 or early 2007.*
Questionnaire.doc	Documentation of the Nurse CAPI questionnaire *Will be archived in late 2006 or early 2007.*

Data Preparation

In preparing the data for archiving, it was necessary to delete certain variables. The following types of variables have been deleted in order to reduce the potential to identify individuals and for other reasons (specified below):

1. Those containing text
2. Those which contained a personal identifier (e.g. name/address)
3. Those considered to be disclosive, such as:
    - Full interview date
    - Full date of birth
4. Timing variables
5. Variables that only contain missing values – excluded because not useful.

There are no geographical variables in either this or the main archived ELSA dataset. Various geographical variables are available under secure arrangements. Please contact the data manager at NatCen if you would like to request access to these variables.

The questionnaire for the nurse visit will be archived in the near future; there will be an indication in this document of the variables that were dropped, rather than putting in a list of them in this User Guide.

A number of questions in the interview gave the nurse the opportunity to enter an 'other' answer. In the main ELSA interview, these 'other' responses were then back-coded into the original question where possible. Please note that no editing or back-coding has been done on this data, as the

majority of the questions with 'other' responses have not been archived because they dealt with administrative information about conducting the tests.

Weighting

There are two weighting variables that are included on the dataset – W2WTBLD and W2WTNUR. The first of these applies to the blood sample results only, while the second applies to the rest of the data. They should be used when carrying out any analyses of this data.

Weights are necessary to adjust the estimates generated from the responding survey sample so that they more accurately represent the characteristics of the population of interest. If appropriate weights are not applied, then the survey estimates will be biased towards the characteristics of the people that participated in the survey, rather than the entire population.

Variable list

This part of the document categorises all the variables included in the archived Wave 2 nurse dataset, and it is therefore easier to see the coverage of questions asked at this summary level. You will need to look at the other documentation to see in more detail exactly how the question was asked in the interview (see full nurse visit questionnaire - to be archived in late 2006 or early 2007), or how a derived variable has been defined (see Appendix 1).

The source of each variable is indicated in the final column of each table of variables with abbreviations as follows:

Nurse	Nurse CAPI Questionnaire
Lab	Results from laboratory, i.e. from blood sample testing
Derived	A variable derived from other variables, detailed in Appendix 1: Derived variable specification
Weight	Weighting variable, to be used for analysis

Individual		
Variable	**Description**	**Source**
IDAUNIQ	Unique individual serial number	Nurse
IDAINDW2	Wave 2 individual analytical serial number	Nurse
IDAHHW2	Wave 2 household analytical serial number	Nurse
HHAGE	Age from dates of birth and nurse visit – used for eligibility for measures	Nurse
CONFAGE	Actual age at nurse visit	Nurse
DOBYEAR	Year of birth	Derived
SEX	Sex	Nurse
W2WTNUR	Weight for nurse data (excluding blood sample analyses)	Weight
W2WTBLD	Weight for blood sample analyses	Weight

Nurse Admin		
Variable	**Description**	**Source**
VISMON	Date of nurse interview, month	Nurse
VISYEAR	Date of nurse interview, year	Nurse

Blood Pressure		
Variable	**Description**	**Source**
BPCONST	Consent to BP measurement	Nurse
CONSUB1	BP: 1st thing respondent has done in last 30 minutes that will affect their BP	Nurse
CONSUB2	BP: 2nd thing respondent has done in last 30 minutes that will affect their BP	Nurse
CONSUB3	BP: 3rd thing respondent has done in last 30 minutes that will affect their BP	Nurse
CUFSIZE	BP: Cuff size used	Nurse
AIRTEMP	BP: Air temperature (centigrade)	Nurse
SYS1	BP: 1st Systolic reading (mmHg)	Nurse
DIAS1	BP: 1st Diastolic reading (mmHg)	Nurse
PULSE1	BP: 1st Pulse reading (bpm)	Nurse
MAP1	BP: 1st Mean Arterial Pressure (MAP) reading (mmHg)	Nurse
FULL1	BP: 1st set of BP readings are complete	Nurse
SYS2	BP: 2nd Systolic reading (mmHg)	Nurse
DIAS2	BP: 2nd Diastolic reading (mmHg)	Nurse
PULSE2	BP: 2nd Pulse reading (bpm)	Nurse
MAP2	BP: 2nd Mean Arterial Pressure (MAP) reading (mmHg)	Nurse
FULL2	BP: 2nd set of BP readings are complete	Nurse
SYS3	BP: 3rd Systolic reading (mmHg)	Nurse
DIAS3	BP: 3rd Diastolic reading (mmHg)	Nurse
PULSE3	BP: 3rd Pulse reading (bpm)	Nurse
MAP3	BP: 3rd Mean Arterial Pressure (MAP) reading (mmHg)	Nurse
FULL3	BP: 3rd set of BP readings are complete	Nurse
YNOBP	BP: Whether BP measurements attempted and not obtained or not attempted	Nurse
BPRESPC	(D) Whether BP readings are valid – not ate, drank, smoked or exercised recently	Derived
SYSVAL	(D) Valid Mean Systolic BP	Derived
DIAVAL	(D) Valid Mean Diastolic BP	Derived
PULVAL	(D) Valid Pulse Pressure	Derived
MAPVAL	(D) Valid Mean Arterial Pressure	Derived
RESPBPS	BP: Response to BP measurements	Nurse
NATTBP1	BP: 1st reason why full set of BP measurements was not collected	Nurse
NATTBP2	BP: 2nd reason why full set of BP measurements was not collected	Nurse

DIFBPC1	BP: 1st difficulty with taking BP measurements	Nurse
DIFBPC2	BP: 2nd difficulty with taking BP measurements	Nurse
DIFBPC3	BP:3rd difficulty with taking BP measurements	Nurse

Grip Strength		
Variable	**Description**	**Source**
MMGSWIL	Grip strength: Whether respondent is willing to have grip strength measured	Nurse
MMGSDOM	Grip strength: Dominant hand to be used for grip strength measurements	Nurse
MMGSSTA	Grip strength: Whether respondent is able to use both, one or neither hands	Nurse
MMGSD1	Grip strength: 1st measurement dominant hand (kg)	Nurse
MMGSN1	Grip strength: 1st measurement non-dominant hand (kg)	Nurse
MMGSD2	Grip strength: 2nd measurement dominant hand (kg)	Nurse
MMGSN2	Grip strength: 2nd measurement non-dominant hand (kg)	Nurse
MMGSD3	Grip strength: 3rd measurement dominant hand (kg)	Nurse
MMGSN3	Grip strength: 3rd measurement non-dominant hand (kg)	Nurse
MMGSTP	Grip strength: Respondent's position during grip strength measurements	Nurse
MMGSRES	Grip strength: Number of grip strength measurements obtained	Nurse
MMGSPR1	Grip strength: 1st reason why none or only some measurements were obtained	Nurse
MMGSPR2	Grip strength: 2nd reason why none or only some measurements were obtained	Nurse

Blood Sample		
Variable	**Description**	**Source**
CLOTB	Blood sample: Whether has clotting disorder	Nurse
FIT	Blood sample: Whether ever had a fit	Nurse
BSWILL	Blood sample: Consent to take blood sample	Nurse
FASTASK	Blood sample: Whether respondent was asked to fast	Nurse
FASTELI	Blood sample: Eligible for a fasting sample? - based on when and what last ate	Nurse
FASTHRS	(D) Time respondent last ate if eligible for fasting sample - see User Guide'	Derived
REFBSC1	Blood sample: 1st reason why taking of blood sample was refused	Nurse
REFBSC2	Blood sample: 2nd reason why taking of blood sample was refused	Nurse
REFBSC3	Blood sample: 3rd reason why taking of blood sample was refused	Nurse
SAMPTAK	Blood Sample: Whether any blood samples taken (incl. DNA samples)	Nurse
SAMDIF1	Blood Sample: 1st problem in taking blood sample	Nurse
SAMDIF2	Blood Sample: 2nd problem in taking blood sample	Nurse
SAMDIF3	Blood Sample: 3rd problem in taking blood sample	Nurse
SAMDIF4	Blood Sample: 4th problem in taking blood sample	Nurse
NOBSM1	Blood Sample: 1st reason for not obtaining blood sample	Nurse
NOBSM2	Blood Sample: 2nd reason for not obtaining blood sample	Nurse
BSOUTC	(D) Outcome of blood sample (excludes DNA sample)	Derived

Blood Sample Results		
Variable	**Description**	**Source**
CFIB	Blood fibrinogen level (g/l)	Lab
CHOL	Blood total cholesterol level (mmol/l)	Lab
HDL	Blood HDL level (mmol/l)	Lab
TRIG	Blood triglyceride level (mmol/l)	Lab
LDL	Blood LDL level (mmol/l)	Lab
FGLU	Blood glucose level (mmol/L) - fasting samples only	Lab
RTIN	Blood ferritin level (ng/ml)	Lab
HSCRP	Blood CRP level (mg/l)	Lab
APOE	Blood APOE level (mmol/l)	Lab
HGB	Blood haemoglobin level (g/dl)	Lab
HBA1C	Blood glycated haemoglobin level (%)	Lab
BLOODR	(D) Whether blood sample was taken and received by the lab	Derived

Height and Weight		
Variable	**Description**	**Source**
RESPHTS	Standing height: Whether standing height measurement was attempted or obtained	Nurse
HEIGHT	Standing height: Standing height (cm) including unreliable measurements	Nurse
RESNHI	Standing height: Reason for refusal of height measurement	Nurse
EHTCH	Standing height: Whether estimated height will be in metric or imperial measures	Nurse
EHTM	Standing height: Estimated height (metres)	Nurse
EHTFT	Standing height: Estimated height (feet)	Nurse
EHTIN	Standing height: Estimated height (inches)	Nurse
ESTHT	Standing height: Final measured/estimated height (cm) incl. unreliable measures	Nurse
HTVAL	(D) Valid height (cm)	Derived
HTOK	(D) Whether height measure is valid	Derived

NOHTBC1	Standing height: 1st reason for not obtaining height measurement	Nurse
NOHTBC2	Standing height: 2nd reason for not obtaining height measurement	Nurse
NOHTBC3	Standing height: 3rd reason for not obtaining height measurement	Nurse
NOHTBC4	Standing height: 4th reason for not obtaining height measurement	Nurse
RELHITE	Standing height: Reliability of standing height measurement according to nurse	Nurse
HINREL	Standing height: Reason for standing height measurement to be unreliable	Nurse
SITHTRS	Sitting height: Whether sitting height measurement was attempted or obtained	Nurse
SITHGT	Sitting height measurement (cm)	Nurse
RESPWTS	Weight: Whether weight measurement was attempted or obtained	Nurse
WEIGHT	Weight (kg) including unreliable measures	Nurse
RESNWT	Weight: Reason for refusal of weight measurement	Nurse
EWTCH	Weight: Whether estimated weight will be in metric or imperial measures	Nurse
EWTKG	Weight: Estimated weight (kg)	Nurse
EWTST	Weight: Estimated weight (stone)	Nurse
EWTL	Weight: Estimated weight (lb)	Nurse
ESTWT	Weight: Final measured or estimated weight (kg) including unreliable measures	Nurse
WTVAL	(D) Valid weight (Kg) inc. estimated>130kg	Derived
WTOK	(D) Whether weight measure is valid	Derived
NOWTBC1	Weight: 1st reason for not obtaining weight measurement	Nurse
NOWTBC2	Weight: 2nd reason for not obtaining weight measurement	Nurse
NOWTBC3	Weight: 3rd reason for not obtaining weight measurement	Nurse
NOWTBC4	Weight: 4th reason for not obtaining weight measurement	Nurse
FLOORC	Weight: Surface scales places on	Nurse
RELWAIT	Weight: Reliability of weight measurement	Nurse
BMI	(D) BMI - inc. unreliable measurements (kg/m^2)	Derived
BMIVAL	(D) Valid BMI - inc. estimated>130kg	Derived
BMIOK	(D) Whether BMI measure is valid	Derived
BMIOBE	(D) Valid BMI grouped according to WHO definitions (kg/m^2)	Derived

Waist and Hip

Variable	Description	Source
WHINTRO	Waist/Hip: Consent to waist/hip measurements	Nurse
WAIST1	Waist: 1st waist measurement (cm)	Nurse
HIP1	Hip: 1st hip measurement (cm)	Nurse
WAIST2	Waist: 2nd waist measurement (cm)	Nurse
HIP2	Hip: 2nd hip measurement (cm)	Nurse
WAIST3	Waist: 3rd waist measurement (cm)	Nurse
HIP3	Hip: 3rd hip measurement (cm)	Nurse
WSTVAL	(D) Valid Mean Waist (cm)	Derived
HIPVAL	(D) Valid Mean Hip (cm)	Derived
WHVAL	(D) Valid Mean Waist/Hip ratio	Derived
WSTOKB	(D) Whether waist measurements are valid	Derived
HIPOKB	(D) Whether hip measurements are valid	Derived
WHOKB	(D) Whether waist/hip measure is valid	Derived
YNOWH	Waist/Hip: Reason why none or only some measurements were obtained	Nurse
RESPWH	Waist/Hip: Response to waist/hip measurements	Nurse
WHPNAB1	Waist/Hip: 1st reason for not obtaining waist and hip measurements	Nurse
WHPNAB2	Waist/Hip: 2nd reason for not obtaining waist and hip measurements	Nurse
WHPNAB3	Waist/Hip: 3rd reason for not obtaining waist and hip measurements	Nurse
WJREL	Waist: Whether problems with waist measurement	Nurse
PROBWJ	Waist: Problems likely to increase/decrease waist measurement	Nurse
HJREL	Hip: Whether problems with hip measurement	Nurse
PROBHJ	Hip: Problems likely to increase/decrease hip measurement	Nurse

Lung Function Admin

Variable	Description	Source
HASURG	Lung function: Whether respondent had abdominal or chest surgery in last 3 weeks	Nurse
EYESURG	Lung function: Whether respondent has had eye surgery in the last 4 weeks	Nurse
HASTRO	Lung function: Whether admitted to hospital for heart complaint in last 6 weeks	Nurse
CHESTIN	Lung function: Whether respondent had any respiratory infection in last 3 weeks	Nurse
INHALER	Lung function: Whether used an inhaler/puffer in last 24 hours	Nurse
INHALHR	Lung function: How many hours ago inhaler/puffer used	Nurse
LFWILL	Lung function: Willing to have lung function measured	
LFTEMP	Lung function: Air temperature (centigrade)	
FVC1	Lung function: 1st FVC reading (litres)	Nurse
FEV1	Lung function: 1st FEV reading (litres)	Nurse
PF1	Lung function: 1st PF reading (litres per minute)	Nurse
TECHNI1	Lung function: Whether respondent's technique was satisfactory for 1st reading	Nurse

FVC2	Lung function: 2nd FVC reading (litres)	Nurse
FEV2	Lung function: 2nd FEV reading (litres)	Nurse
PF2	Lung function: 2nd PF reading (litres per minute)	Nurse
TECHNI2	Lung function: Whether respondent's technique was satisfactory for 2nd reading	Nurse
FVC3	Lung function: 3rd FVC reading (litres)	Nurse
FEV3	Lung function: 3rd FEV reading (litres)	Nurse
PF3	Lung function: 3rd PF reading (litres per minute)	Nurse
TECHNI3	Lung function: Whether respondent's technique was satisfactory for 3rd reading	Nurse
NLSATLF	Lung function: Whether technique was satisfactory on any measurements	Nurse
HTFVC	Lung function: Highest technically satisfactory FVC reading (litres)	Nurse
HTFEV	Lung function: Highest technically satisfactory FEV reading (litres)	Nurse
HTPF	Lung function: Highest technically satisfactory PF reading (litres per minute)	Nurse
NOREAD	Lung function: No readings obtained	Nurse
YNOLF	Lung function: Reason why no measurements were obtained	Nurse
LFSTAND	Lung function: Measurements taken while standing or sitting?	Nurse
LFRESP	Lung function: How many technically correct blows were obtained	Nurse
PROBLF1	Lung function: 1st reason why not all lung function measurements were obtained	Nurse
PROBLF2	Lung function: 2nd reason why not all lung function measurements were obtained	Nurse
PROBLF3	Lung function: 3rd reason why not all lung function measurements were obtained	Nurse
NOATTLF	Lung function: Reason why refused or no measurements obtained	Nurse
LFNOMEA	(D) Reason why lung function not measured	Derived

Balance

Variable	Description	Source
MMBCSC	May be prevented from balancing or standing up from chair due to health reasons	Nurse
MMSSSC	Side-by-side stand: Whether respondent feels it is safe to attempt stand	Nurse
MMSSRE	Side-by-side stand: Outcome	Nurse
MMSSTI	Side-by-side stand: Time position held (seconds)	Nurse
MMSSNA	Side-by-side stand: Reason not attempted	Nurse
MMSTSC	Semi-tandem stand: Whether respondent feels it is safe to attempt stand	Nurse
MMSTRE	Semi-tandem stand: Outcome	Nurse
MMSTTI	Semi-tandem stand: Time position held (seconds)	Nurse
MMSTNA	Semi-tandem stand: Reason not attempted	Nurse
MMFTSC	Full tandem stand: Whether respondent feels it is safe to attempt stand	Nurse
MMFTTI	Full tandem stand: Time position held (seconds)	Nurse
MMFTRE2	(D) Outcome of full tandem stand according to age	Derived
MMFTNA	Full tandem stand: Reason not attempted	Nurse

Leg Raise

Variable	Description	Source
MMLOSC	Leg raise (eyes open): Whether respondent feels it is safe to attempt it	Nurse
MMLORE	Leg raise (eyes open): Outcome	Nurse
MMLOTI	Leg raise (eyes open): Time leg raise held (seconds)	Nurse
MMLONA	Leg raise (eyes open): Reason not attempted	Nurse
MMLSSC	Leg raise (eyes shut): Whether respondent feels it is safe to attempt it	Nurse
MMLSRE	Leg raise (eyes shut): Outcome	Nurse
MMLSTI	Leg raise (eyes shut): Time leg raise held (seconds)	Nurse
MMLSNA	Leg raise (eyes shut): Reason not attempted	Nurse

Chair Rise

Variable	Description	Source
MMCRAV	Chair rise: Whether suitable chair available	Nurse
MMCRSC	Chair rise: Whether respondent feels it is safe to attempt single chair rise	Nurse
MMCRRE	Chair rise: Single chair rise outcome	Nurse
MMCRNA	Chair rise: Reason single chair rise not attempted	Nurse
MMRRSC	Chair rise: Whether respondent feels it is safe to attempt multiple chair rises	Nurse
MMRRRE	Chair rise: Outcome of multiple chair rises (number of rises completed)	Nurse
MMRRFTI	Chair rise: Time to complete 5 rises (seconds)	Nurse
MMRRTTI	Chair rise: Time to complete ten rises (seconds) - only eligible if under 70 yrs	Nurse
MMRROC	(D) Chair rise: Outcome of multiple chair rises, split by age	Derived
MMRRNA	Chair rise: Reason multiple chair rises not attempted	Nurse

Appendix 1 – Derived variable and recoding specification

This section of the User Guide gives further detail about derived variables that are being archived and any existing variables that were re-coded or combined. In the case of many of the variables an explanation of the derivation is given as well as the SPSS syntax. Explanations of variables used in the derivations that haven't been archived are also provided.

DOBYEAR

This variable is the same as NDOBY (not archived) but year of birth has been re-coded to –7 for everyone aged 90 or over (age from HHAGE). This is done as there are relatively few ELSA respondents over 90 and it is considered disclosive to give their actual year of birth.

```
compute dobyear=ndoby.
execute.
do if hhage>=90.
compute dobyear=-7.
end if.
execute.
variable label dobyear '(D) Year of birth, collapsed for those aged 90
or over'.
value labels dobyear
-7 'Year of birth of respondent aged 90 or over'.
```

BPRESPC

The information from RESPBPS (the number of blood pressure readings obtained), FULL1-3 (whether blood pressure readings were ok) and CONSUB1-4 (whether the respondent did anything that might affect their blood pressure just before it was taken) is combined in this variable. This variable is a measure of whether the BP readings are *technically* valid, i.e. the respondent had not eaten, drunk, smoked, or exercised in the half hour prior to the measurement being taken.

```
RECODE respbps (1=1)(2,3=4)(4,5,6=5) into bprespc.
execute.
IF ANY(full1,2,-8,-9) | ANY(full2,2,-8,-9) | ANY(full3,2,-8,-9)
bprespc=4.
IF (respbps=1 & ANY(1,consub1,consub2,consub3)) bprespc= 2.
IF (respbps=1 & ANY(2,consub1,consub2,consub3)) bprespc= 2.
IF (respbps=1 & ANY(3,consub1,consub2,consub3)) bprespc= 2.
IF (respbps=1 & ANY(4,consub1,consub2,consub3)) bprespc= 2.
IF (respbps=1 & ANY(-9,consub1,consub2,consub3)) bprespc= 3.
IF (bpconst=1 & respbps=5) bprespc=4.
VARIABLE LABEL bprespc "(D) Whether BP readings are valid".
VALUE LABELS bprespc
  1 'Valid blood pressure measurement'
  2 'Ate, drank, smoked, exercised in previous half hour'
  3 'Not known if ate, drank, smoked or exercised'
  4 'Three valid readings not obtained'
  5 'Refused, attempted but not obtained, not attempted'.
execute.
```

DIAVAL, SYSVAL, MAPVAL and PULVAL

These variables give the mean of the second and third readings for diastolic, systolic, arterial pressure and pulse pressure. To clarify, the mean values for the four blood pressure measurements are calculated on the second and third measurements only, as the first measurement is often higher as respondents can be anxious about having their blood pressure taken. Only the *technically* valid

readings are given in this variable (i.e. when the respondent had not eaten, drunk, smoked, or exercised in the half-hour prior to the measurement being taken).

```
do if respbps=1 and bprespc=1.
COMPUTE diaval=(dias2 + dias3)/2.
COMPUTE sysval=(sys2 + sys3)/2.
COMPUTE mapval=(map2 + map3)/2.
COMPUTE pulval=sysval-diaval.
end if.
VARIABLE LABELS diaval "(D) Valid Mean Diastolic BP".
VARIABLE LABELS sysval "(D) Valid Mean Systolic BP".
VARIABLE LABELS mapval "(D) Valid Mean Arterial Pressure".
VARIABLE LABELS pulval "(D) Valid Pulse Pressure".
recode diaval sysval mapval pulval (sysmis=-1).
add value labels diaval sysval mapval pulval
 -1 'Either invalid or incomplete set of BP readings obtained'.
```

FASTHRS

This variable shows, for those who were eligible for a fasting blood sample, the number of hours ago that the respondent last ate before their blood sample was taken. During the nurse visit, the CAPI program worked out whether the respondent was eligible to fast or not based on the criteria described in the Blood Sample section (see pages 4-5). According to these criteria, the respondent is considered as having fasted if they had not eaten or drunk anything (apart from water) in the past **five hours**. These people have FASTELI=1. However, as some analysts may want to exclude any respondents who did not fast for at **least eight hours**, we have created a derived variable that indicates this.

This variable is only applicable to those who were eligible for a fasting blood sample. Unfortunately, there were some problems with the way that the CAPI program stored the time and date that the respondent last ate. So, for those who were eligible, it first considers those whose times or dates last eaten were not reliable. It does this using ATEDBEF (not archived), itself a derived variable showing whether the respondent last ate the day before their nurse visit or on the day of the visit itself, and additionally whether the time last eaten was recorded.
Those who last ate the day before their nurse visit (ATEDBEF=1) are considered to have fasted for more than eight hours. Those who ate on the same day as their nurse visit and have a time last eaten recorded as being at least eight hours before their blood sample was taken (ATEDBEF=2 and TIMEATE=3), are also put in the category of having fasted for more than eight hours. TIMEATE is also not archived, and was another derived variable.

Finally, those who ate on the same day as their nurse visit but have a time last eaten recorded that is between five and eight hours before their blood sample was taken (ATEDBEF=2 and TIMEATE=2) are categorised as having fasted for between five and eight hours.

```
do if fasteli=-1 or fasteli=2.
compute fasthrs=-1.
end if.
do if sysmis(fasthrs) and (atedbef=-2 or atedbef=0).
compute fasthrs=-2.
end if.
do if sysmis(fasthrs) and atedbef=1.
compute fasthrs=1.
end if.
do if sysmis(fasthrs) and atedbef=2 and timeate=3.
compute fasthrs=1.
end if.
do if sysmis(fasthrs) and atedbef=2 and timeate=2.
compute fasthrs=2.
end if.
do if sysmis(fasthrs) and atedbef=2 and timeate=1.
compute fasthrs=3.
end if.
Execute.
variable labels fasthrs '(D) Time respondent last ate if eligible for
fasting sample - see User Guide'.
value labels fasthrs
 -2 'No reliable info about time or date last eaten'
 -1 'Not applicable'
  1 'More than 8 hours before blood sample taken'
  2 'Between 5 and 8 hours before blood sample taken'.
```

BSOUTC

This variable combines information from SAMPF1 – 4 (not archived, these showed whether the blood sample tubes were filled or not) as well as CLOTB, FIT and BSWILL. It is an outcome variable for the blood sample. Please note that BSOUTC only equals 1 if **all** the blood samples were taken for this respondent (excluding the ones for DNA analysis), i.e. the respondent must have had a fasting blood sample.

```
compute bsoutc=-1.
execute.
if any (1, sampf1, sampf2, sampf3, sampf4) bsoutc=2.
if sampf1=1 and sampf2=1 and sampf3=1 and sampf4=1 bsoutc=1.
if sampf1=2 and sampf2=2 and sampf3=2 and sampf4=2 bsoutc=3.
if sampf1=2 and sampf2=2 and sampf3=-1 and sampf4=2 bsoutc=3.
if clotb=1 or fit=1 bsoutc=4.
if bswill=2 bsoutc=5.
execute.
variable labels bsoutc '(D) Outcome of blood sample (excludes DNA
sample)'.
value labels bsoutc
  1 'Full sample taken - all tubes at least partially filled'
  2 'Partial sample taken - at least one tube (partially) filled'
  3 'No sample taken - no tubes filled or partially filled'
  4 'Respondent not eligible due to clotting disorder or fit'
  5 'Respondent did not consent to sample being taken'.
```

BLOODR

This variable shows whether a respondent had a blood sample taken and whether the lab then received the sample for analysis. In particular it highlights three respondents, all of whose blood samples were not received.

```
compute bloodr=-1.
execute.
if blood_fl=1 and chol~=-1 and hdl~=-1 and trig~=-1 and ldl~=-1 and
rtin~=-1 and hscrp~=-1 and hba1c~=-1 and cfib~=-1 and hgb~=-1 and
apoe~=-1 bloodr=1.
if blood_fl=1 and any (-1, chol, hdl, trig, ldl, rtin, hscrp, hba1c,
cfib, hgb, apoe) bloodr=2.
if blood_fl=1 and chol=-1 and hdl=-1 and trig=-1 and ldl=-1 and
rtin=-1 and hscrp=-1 and hba1c=-1 and fglu=-1 and cfib=-1 and hgb=-1
and apoe=-1 bloodr=3.
if blood_fl=0 bloodr=4.
value labels bloodr
  1 'All bloods taken were received by lab'
  2 'Some bloods taken were not received by lab'
  3 'No bloods taken were received by lab'
  4 'No blood sample taken'.
variable labels bloodr '(D) Whether blood sample was taken and
received by the lab'.
```

HTOK

This variable combines information from RESPHTS (whether height was measured) and RELHITE (whether the nurse thought the height measurement was reliable). This variable is an indication of whether the height measurement was *technically* valid (i.e. whether the nurse considered the measure to have been reliable or not).

```
RECODE resphts (1=1)(2=3)(3=4)(4=5) (-1=-1) INTO htok.
IF relhite=3 htok=2.
VARIABLE LABELS htok "(D) Whether height measure is valid".
VALUE LABELS htok
  1 "Valid (according to nurse)"
  2 "Height not usable (not valid according to nurse)"
  3 "Refused"
  4 "Attempted but not obtained"
  5 "Not attempted".
```

WTOK

This variable combines information from RESPWTS (whether weight was measured) and RELWAIT (whether the nurse thought the weight measurement was reliable). This variable is an indication of whether the weight measurement was *technically* valid (i.e. whether the nurse considered the measure to have been reliable or not).

```
RECODE respwts (0,1=1)(2=3)(3=4)(4=5)(-1=-1) INTO wtok.
IF relwait=3 wtok=2.
VARIABLE LABELS wtok "(D) Whether weight measure is valid".
VALUE LABELS wtok
  1 "Valid (according to nurse)"
  2 "Weight not usable (not valid according to nurse)"
  3 "Refused"
  4 "Attempted but not obtained"
  5 "Not attempted".
```

HTVAL

This variable is the same as HEIGHT but excludes measurements that were considered to be unreliable by the nurse.

```
COMPUTE htval=-1.
IF htok=1 htval=height.
VARIABLE LABELS htval "(D) Valid height (cm)".
Value labels htval –1 ‘Not applicable’.
```

WTVAL

This variable is the same as WEIGHT but excludes measurements that were considered to be unreliable by the nurse. This variable also includes estimated weight (ESTWT) for respondents who weighed more than 130kg and could therefore not have their weight measured on the scales.

```
COMPUTE wtval=-1.
IF wtok=1 wtval=weight.
if range(estwt,130,500) & any(wtok,3,4,5) wtval=estwt.
VARIABLE LABELS wtval "(D) Valid weight (Kg) inc. estimated>130kg".
Value labels wtval –1 ‘Not applicable’.
```

BMI

This is a calculation of the body mass index, which is derived from height and weight. Please note that this variable includes measurements that were considered unreliable by the nurse.

```
COMPUTE bmi=-1.
IF height>0 & weight>0 bmi=(weight*100*100)/(height*height).
variable labels bmi '(D) BMI - inc unreliable measurements (kg/m2)'.
value labels bmi -1 "Not Applicable".
```

BMIVAL

This variable provides the body mass index (BMI) measurements that were considered to be reliable by the nurse. If the respondent’s height measurement was considered to be reliable (from HTOK) but the weight measurement was an estimate (necessary if the respondent’s weight was greater than 130kg, ESTWT), then BMI is calculated using these measurements.

```
COMPUTE bmival=-1.
IF (bmiok=1) bmival=bmi.
IF (range(estwt,130,500) & ANY(wtok,3,4,5) & htok=1)
  bmival=(estwt * 100 * 100)/(height * height).
VARIABLE LABELS bmival "(D) Valid BMI - inc estimated>130kg".
```

BMIOK

This variable combines information regarding the technical validity of the height and weight measurements (HTOK and WTOK respectively) into an indication of whether the BMI (body mass index) value that is derived from them is valid. Only respondents for whom both the height and weight measurements were considered to be reliable by the nurse are considered to have valid BMI measures.

```
IF ANY(1,htok) & wtok=1 bmiok=1.
IF ANY(2,htok,wtok) bmiok=2.
IF ANY(3,htok,wtok) bmiok=3.
IF ANY(4,htok,wtok) bmiok=4.
IF ANY(5,htok,wtok) bmiok=5.
IF htok=-1 bmiok=-1.
IF wtok=-1 bmiok=-1.
VARIABLE LABELS bmiok "(D) Whether BMI measure is valid".
VALUE LABELS bmiok
  1 "Valid (according to nurse)"
  2 "Height/weight not usable (not valid according to nurse)"
  3 "Height/weight refused"
  4 "Height/weight attempted but not obtained"
  5 "Height/weight not attempted".
```

BMIOBE

This variable contains technically valid body mass index (BMI) measurements (BMIVAL) grouped according to the current World Health Organisation definitions of obesity.

```
recode bmival (0 thru 18.5=1) (18.5 thru 25=2) (25 thru 30=3) (30 thru
35=4) (35 thru 40=5) (40 thru hi=6) (lo thru-1=copy)
into bmiobe.
execute.
variable label bmiobe "(D) Valid BMI grouped according to WHO
definitions".
value labels bmiobe
  1 'Under 18.5, underweight'
  2 '18.5 or over but less than 25, normal range'
  3 '25 or over but less than 30, pre-obese'
  4 '30 or over but less than 35, obese class I'
  5 '35 or over but less than 40, obese class II'
  6 '40 or over, obese class III'.
```

WSTOKB

This variable shows which of the three waist measurements are valid. It is worked out initially as a re-coded version of RESPWH (whether waist and hip measurements are valid). Three temporary variables are created (XXST12, XXST13 and XXST23, not archived) which show the difference between each waist measurement. If the difference between the first and second measurements is 3cm or less, and the waist measurement is, at worst, only slightly unreliable (WJREL) then these measurements are coded as usable. Similarly, the difference between the first and third, and second and third measurements is then considered.

```
RECODE respwh (1=1)(2=1)(3=8)(4=9)(-6,-2,-1=COPY) INTO wstokb.
COMPUTE xxwst12=abs(waist-waist2).
COMPUTE xxwst13=abs(waist-waist3).
COMPUTE xxwst23=abs(waist2-waist3).
IF respwh=1 & xxwst12<=3 & any(wjrel,1,2,3) wstokb=1.
DO IF respwh=1 & xxwst12>3.
COMPUTE wstokb=6.
IF xxwst13<=3 wstokb=2.
IF xxwst23<=3 wstokb=3.
END IF.
IF respwh=1 & xxwst12<=3 & xxwst13<=3 & xxwst23<=3 wstokb=4.
DO if respwh=1 or respwh=2.
If any(waist, -1, -2) & any(waist2, -1, -2) wstokb=7.
If any(waist, -1, -2) & any(waist3, -1, -2) wstokb=7.
If any(waist2, -1, -2) & any(waist3, -1, -2) wstokb=7.
End if.
IF ANY(wjrel,4,-9) wstokb=5.
execute.
VARIABLE LABELS wstokb "(D) Whether waist measurements are valid".
VALUE LABELS wstokb
  1 'Usable 1st & 2nd measurements'
  2 'Usable 1st & 3rd measurements'
  3 'Usable 2nd & 3rd measurements'
  4 'Usable 1st & 2nd & 3rd measurements'
  5 'Not useable: unreliable (according to nurse)'
  6 'Not useable: difference > 3cm'
  7 'Partial response'
  8 'Refused'
  9 'Not attempted'.
```

WSTVAL

This variable gives the mean of the useable waist measurements (WSTOKB).

```
COMPUTE wstval=-1.
IF wstokb=1 wstval=(waist+waist2)/2.
IF wstokb=2 wstval=(waist+waist3)/2.
IF wstokb=3 wstval=(waist2+waist3)/2.
IF wstokb=4 wstval=(waist+waist2+waist3)/3.
VARIABLE LABEL wstval "(D) Valid Mean Waist (cm)".
Add value labels wstval –1 ‘Not applicable’.
```

HIPOKB

This variable shows which of the three hip measurements are valid. It's derivation is very similar to that of WSTOKB, in that the differences between the measures are assessed in temporary variables (XXHIP12, XXHIP13, and XXHIP23, not archived), and it is then calculated which measurements are usable.

```
RECODE respwh (1=1)(2=1)(3=8)(4=9)(-6,-2,-1=COPY) INTO hipokb.
COMPUTE xxhip12=abs(hip-hip2).
COMPUTE xxhip13=abs(hip-hip3).
COMPUTE xxhip23=abs(hip2-hip3).
IF respwh=1 & xxhip12<=3 & any(hjrel,1,2,3) hipokb=1.
DO IF respwh=1 & xxhip12>3.
COMPUTE hipokb=6.
IF xxhip13<=3 hipokb=2.
IF xxhip23<=3 hipokb=3.
END IF.
IF respwh=1 & xxhip12<=3 & xxhip13<=3 & xxhip23<=3 hipokb=4.
do if respwh=1 or respwh=2.
if any (hip, -1, -2) & any (hip2, -1, -2) hipokb=7.
if any (hip, -1, -2) & any (hip3, -1, -2) hipokb=7.
if any (hip2, -1, -2) & any (hip3, -1, -2) hipokb=7.
end if.
IF ANY(hjrel,4,-9) hipokb=5.
execute.
VARIABLE LABELS hipokb "(D) Whether hip measurements are valid".
VALUE LABELS hipokb
  1 'Usable 1st & 2nd measurements'
  2 'Usable 1st & 3rd measurements'
  3 'Usable 2nd & 3rd measurements'
  4 'Usable 1st & 2nd & 3rd measurements'
  5 'Not useable: unreliable (according to nurse)'
  6 'Not useable: difference > 3cm'
  7 'Partial response'
  8 'Refused'
  9 'Not attempted'.
```

HIPVAL

This variable gives the mean of the useable hip measurements (HIPOKB).

```
COMPUTE hipval=-1.
IF hipokb=1 hipval=(hip+hip2)/2.
IF hipokb=2 hipval=(hip+hip3)/2.
IF hipokb=3 hipval=(hip2+hip3)/2.
IF hipokb=4 hipval=(hip+hip2+hip3)/3.
VARIABLE LABEL hipval "(D) Valid Mean Hip (cm)".
Add value labels hipval –1 ‘Not applicable’.
```

WHOKB

This variable draws on WSTOKB and HIPOKB to calculate the usability of the waist and hip measurements.

```
RECODE wstokb(-6,-2,-1=COPY) into whokb.
IF RANGE(wstokb,1,4) & RANGE(hipokb,1,4) whokb=1.
IF ANY(5,wstokb,hipokb) | ANY(6,wstokb,hipokb) whokb=2.
IF ANY(7,wstokb,hipokb) whokb=3.
IF ANY(8,wstokb,hipokb) whokb=4.
IF ANY(9,wstokb,hipokb) whokb=5.
VARIABLE LABELS whokb "(D) Whether waist/hip measure is valid".
VALUE LABELS whokb
  1 "Valid"
  2 "Waist/Hip not usable"
  3 "Waist/Hip partial response"
  4 "Waist/Hip refused"
  5 "Waist/Hip not attempted".
```

WHVAL

This variable gives the mean waist/hip ratio if both the waist and hip measurements are considered to be useable (WSTOKB and HIPOKB).

```
COMPUTE whval=-1.
IF whokb=1 whval=wstval/hipval.
VARIABLE LABEL whval "(D) Valid Mean Waist/Hip ratio".
Add value labels whval –1 ‘Not applicable’.
```

MMRROC

This variable was derived to clarify the outcome of the number of chair rises completed by age. It is based on MMRRRE) Respondents aged 70 or over were only asked to do 5 chair rises whereas younger respondents were asked to do 10 chair rises.

```
compute mmrroc=-1.
if mmrrre>4 and hhage>=69 mmrroc=1.
if mmrrre>-1 and mmrrre<5 and hhage>=69 mmrroc=2.
if mmrrre>-1 and hhage<=70 mmrroc=4.
if mmrrre=10 and hhage<=70 mmrroc=3.
if mmrrsc=2 mmrroc=5.
add value labels mmrroc
  1 'Completed 5 rises, respondent aged 70 or over'
  2 'Completed less than 5 rises, respondent aged 70 or over'
  3 'Completed 10 rises, respondent aged less than 70'
  4 'Completed less than 10 rises, respondent aged less than 70'
  5 'Not attempted - did not feel it was safe'
-1 'Not applicable - did not do single rise successfully'.
variable labels mmrroc '(D) Chair rise: Outcome of multiple chair rises,
split by age'.
```

LFNOMEA

This variable shows more clearly the reason why lung function was not measured.

```
compute lfnomea=-1.
if lfwill=-1 lfnomea=1.
if xlftemp=1 lfnomea=2.
if noread=1 or lfwill=3 lfnomea=3.
if lfwill=2 lfnomea=4.
variable labels lfnomea '(D) Reason why lung function not measured'.
add value labels lfnomea
 -1 'Not applicable'
  1 'Respondent ineligible for LF measurement for medical reasons'
  2 'Temperature too cold for LF measurement to take place'
  3 'Not attempted or obtained for reason other than refusal'
  4 'Respondent refused'.
```

MMFTRE2

This variable was derived to clarify the outcome of the full-tandem stand by age. It uses MMFTRE (not archived), which was the original outcome variable.

```
compute mmftre2=-1.
recode mmftre (3=5) into mmftre2.
do if hhage >=70.
recode mmftre (1=1) into mmftre2.
recode mmftre (2=2) into mmftre2.
end if.
do if hhage <70.
recode mmftre (1=3) into mmftre2.
recode mmftre (2=4) into mmftre2.
end if.
execute.
value labels mmftre2
 -1 "Ineligible - did not hold semi-tandem stand for 10 seconds"
  1 'Held for 10 seconds, respondent aged 70 or over'
  2 'Held for less than 10 seconds, respondent aged 70 or over'
  3 'Held for 30 seconds, respondent aged less than 70'
  4 'Held for less than 30 seconds, respondent aged less than 70'
  5 'Stand not attempted'.
variable labels mmftre2 '(D) Outcome of full tandem stand according to
age'.
```

Contact details

ELSA Data Manager:
Susan Nunn
E-mail: s.nunn@natcen.ac.uk
Telephone: 020 7250 1866

Health Survey for England (HSE) Data Manager:
Claire Deverill
E-mail: c.deverill@natcen.ac.uk
Telephone: 020 7250 1866